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THE

ANNUAL ORATION

OF THE

HUNTERIAN SOCIETY,

For 1892.

BY

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LONDON
PRINTED BY ASH & CO., 42, SOUTHWARK STREET, S.E.

1892

The following remarks by Sir T. Blizzard, first President of the Hunterian Society, form an appropriate introduction to the study of Hunter's Life:—

"Let your search after truth be eager and constant. Be wary in admitting propositions to be facts before you have submitted them to the strictest examination. If, after this you believe them to be true, never disregard or forget any one of them, however unimportant it may at the time appear. Should you perceive truths to be important, make them motives of action; let them serve as springs to your conduct. Many persons acknowledge truth with apathy; they assent to it, but it produces no further effects on their minds. Truths however are of importance, in proportion as they admit of inferences which ought to have an influence in our conduct; and if we neglect to draw those inferences, or to act in conformity to them, we fail in essential duties." —*Abernethy's Introductory Lectures, 1814.*

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BY CHARTERS J. SYMONDS, M.S., F.R.C.S. Eng.,
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Mr. President and Gentlemen,

When, by the favour of your Council, I was invited to address you to-night, I deemed it my duty, in order the better to fulfil the purpose of this annual oration, as well as to show my sense of the honour conferred upon me, to study the life and writings of John Hunter. I conceive it to be one object of this oration to show how the work, and life of others, may animate our own, and stimulate us to higher aims. In this sense, I have endeavoured to read the life of him, whose birth one hundred and sixty-four years ago we commemorate to-night.

As an able biographical sketch formed the subject of a recent oration,[1] I propose to confine myself to the influence of Hunter's work, and to his personal influence on Surgery and Surgeons. In order to appreciate the effect of his work, it will be necessary first, to study the position of surgery before his time, in the writings of those who preceded, those who taught him, and of those who were his contemporaries. Next I propose to discuss Hunter's own work, and more particularly his method, to note, but only in a very general way, how this teaching differed from that of his predecessors. Then to observe the effect of his teaching, on those who followed him, and to ask what was the attraction of Hunter for those who became themselves celebrated men. Finally, to note the personal influence of Hunter, and to enquire how far his teaching was accepted in his own day.

In the earliest times medicine had reached, in the hands of the Greeks and Romans, a position of great usefulness and importance, and two hundred years before the Christian era the Alexandrian School was flourishing. Here dissections were practised, and with its famous library, every advantage

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[1] By Mr. Clement Lucas.

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* *Reprinted from the Transactions of the Society.*

was afforded for developing the scientific study of medicine. It was here that the practice of medicine was separated into three parts, and each part assigned to a different person, one of whom was supposed to cure disease by compounds of drugs and other substances; another by regimen and plans of diet; and the third by manual operations and instruments.[2] The dark period which followed the destruction of the Alexandrian School, reduced to such a degree the amount of medical knowledge as to make it unnecessary and impossible to maintain this division, and the subject was treated as a whole by succeeding writers. Unfortunately for scientific pursuits, early in the fifth century, the northern hordes swept over Europe, and in the seventh, the Mohammedan power conquered Palestine, Egypt, Northern Africa, and penetrated into Spain. The darkness that followed affected all learning, but the knowledge of books and of the arts remained in Italy, where alone the Roman power withstood the tide of conquest. Here the priests and monks formed the educated class, and being able to read the Greek and Latin authors, acquired a knowledge of medicine, and for centuries the practice of physic remained in the hands of the clergy.[3] The Arabs in Spain established a famous school of learning (including medicine), and here the older authors were translated into Arabic. It is interesting to notice that the Jews, understanding this language, obtained a great ascendency in the practice of medicine, though laws were passed and Papal edicts issued, rendering it penal for a Jew to prescribe for a Christian, yet in every Court a physician belonging to the race was to be found.

In the years immediately preceding the Norman Conquest, a stimulus was given to the study of medicine by the medical schools at Salernum, Naples and Montpelier, which were frequented by students from all parts of Europe. The Salernum School, in the eleventh century, conferred a licence to practice as a physician, and as a surgeon. In reference to surgery, the statute was, that "the person examined must be twenty-one years of age, and must bring testimonials of having studied physic for five years; if to be admitted in surgery, he must learn anatomy for one year; he must swear to be true and obedient to the Society, to refuse fees from the poor, and to have no share of the gains with the apothecaries." A critical writer of the twelfth century observes that the students return full of flimsy theories, quoting Galen and Hippocrates. They have two maxims which they never violate: "Never mind the poor; never refuse money from the rich."[4]

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[2] Abernethy, Oration, p. 14.

[3] Rivington.

So lucrative did the priests find the practice of physic, that they neglected their monastic duties, and incurred the displeasure of the Pope, who, looking upon the manual part as derogatory, issued a decree interdicting the priests from performing any surgical operations whatever. They, however, anxious to retain a hold on this branch, employed their servants, the barbers, to shave the heads of their patients before applying external remedies.[5] "Finding these fellows handy with edge tools, the priests taught them to bleed, and perform the minor operations, as well as to make salves and poultices, and to dress wounds and sores."[6] Hence came the barber-surgeon.

It will be seen then that the separation of physic from surgery was due to an edict of a Pope, the first separation taking place in the beginning of the fourteenth century.[7] The priests were at length compelled to relinquish the practice of physic, which now passed into the hands of some of the learned of the laity, who could read the Latin and Greek authors, while the barbers formed themselves into a fraternity of barber-surgeons. Thus we see that the physician has ever been the scholar, and confident in this superiority, we find him despising his less learned brother. The better of the barber-surgeons soon separated themselves from the barbers, and became very early a company of surgeons.

In London there were many struggles between the barber-surgeons and surgeons. The former were incorporated as a company, while in 1421 the surgeons and physicians united for the purposes of improving the education and position of both branches of the healing art. Unfortunately the union was short lived, and the separation gave rise to mutual jealousies and troubles, which continued for over 300 years. So late as 1632 the physicians obtained an order of Council, that no surgeon should trepan, cut for stone, or perform any large operation unless a physician were present, and yet they declined to examine in surgery. This edict was withdrawn in three years.[8] Even after the first separation of the surgeons from the barbers, in 1744, the surgeon was still not allowed to prescribe internal remedies. And in Hunter's time, the name of the physician appeared on the bed-letter when more than a black draught was ordered. Abernethy did much to remove all this, and so did Cheselden. It was on the part of the surgeons an earnest of their desire to improve the position of their art at any sacrifice, that they took with them only the Arris and Gale bequests, leaving the barbers the hall and plate. Pott and Hunter were appointed the Masters in Anatomy at the new Hall of the Surgeons, in the Old Bailey, in 1753. Even in some of the early Hunterian orations—and the first was delivered in 1814—several apologetic remarks occur, indicating that the surgeon, in claiming an equal position for his branch, was careful to avoid slighting the physician.

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[4] "Craft of Surgery." [5] South. [6] Abernethy. [7] Rivington.

The preceding sketch shows that it was only just before Hunter's time that the surgeons were placed on an independent basis. It was not till 1800 that the Charter constituting the Company into a Royal College was granted.

Between Wiseman (the first surgical writer of any importance), who flourished about 1660, and Cheselden, one of the teachers of Hunter, no author of any note had appeared. Cheselden wrote a good work on anatomy, and was celebrated for the improvements he introduced into the operation for stone. He took an active interest in the formation of the Company of Surgeons in 1744, and was its first Master. Hunter obtained his first lessons in surgery at Chelsea Hospital, in 1750, under Cheselden, who continued to operate there after leaving St. Thomas's Hospital. He died in 1752. A pupil of Cheselden was Samuel Sharp, who succeeded his preceptor as Lecturer at St. Thomas's in 1730, and was from 1733 to 1757 Surgeon to Guy's Hospital. He published in 1739, "A Treatise on the Operations of Surgery," and here showed that the method of treating wounds was beginning to improve. "Matter," he says, "when it is good is no disservice to wounds, and surgeons should therefore be less curious in wiping them clean when they are tender and painful," a direction one has to inculcate by no means unfrequently at the present day. Again he says, "A tent brings noxious matter in contact with all parts of the sinus, and makes the case worse." He objects to the use of hot ointments, a relic, no doubt, of the boiling-oil treatment of gunshot wounds of Ambrose Paré's time; gives directions for better drainage, by position and compress, and concludes by cautioning the surgeon "not upon all occasions to search into an abscess with finger and probe, as it often tears them open and indisposes them for a cure." He advocates the use of sutures, and Sharp's "cross stitch" suture (for stumps) is referred to by Hunter. But the work by which he is better known is the "Critical Enquiry into the Present State of Surgery," published in 1761. He comments upon the position of surgery, not only in England, but in France, whither as a young man he had resorted for study. In this he advocates the primary suture of divided tendons, objects to the reduction of a hernia without opening the sac, because, as he very truly says, gangrenous intestine or omentum, or irritating fluids may be returned. He moreover recognised that the true cause of strangulation was in the neck of the sac, and not in the external structures; and still more important, he advocates the removal of gangrenous bowel and the suture of the two ends, by placing one an eighth of an inch within the other. This he says was a suggestion of Cheselden. He criticises adversely the ligature of the sac with a view of preventing recurrence. Referring to the use of the ligature in arresting bleeding in operations he says, "In all probability it will at last be more generally established, though at present it is not received with that universal acceptation one would wish and expect" (p. 303). He did much to remove the crude notions in hydrocele, denying the existence of several reputed forms; and Pott, in his excellent monograph, says, "For a particular elucidation of this subject, the chirurgic world is much obliged to the late Professor Monro, of Edinburgh, and

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[8] Rivington, p. 46.

Mr. Samuel Sharp, late of Guy's Hospital, now of Bath."[9] He thus criticises the high operation for stone—"Though the objections have absolutely discredited this way of cutting with the present age, I should not be surprised if hereafter, on particular occasions, it should be revived and practised with success." He further points out, that the most frightful difficulty is the possibility of a contracted bladder; and now that the distension of the bladder can be secured by injection and the use of anæsthetics, the high operation has attained an even more favourable position than he foretold.

Sharp was, as the above extracts will show, a careful surgeon, was well acquainted with the modern and ancient literature of the subjects he discussed. He was "judicious, a lover of simplicity, and wisely doubtful."[10] "Perhaps," he says, "in this inquisitive age, it may appear surprising that for so long a course of time no one should have detected the falsity of this opinion on hydrocele. But it was the fatality of those days, that physicians and philosophers believed the bounds of science were fixed, and all they studied was how to accommodate their opinions to those of Hippocrates, Aristotle or Galen."[11]

One more extract will show his caution, and his accuracy, commenting on the efficacy of the new remedy—Cortex Peruvianus—in gangrene; "perhaps," he says, "it seems strange thus to dispute a doctrine established on what is called matter of fact, but I will here observe that in the practice of physic and surgery it is often exceedingly difficult to ascertain a fact."

Sir W. Blizard, in 1815,[12] pays the following tribute to his memory:—"Samuel Sharp was an eminent example of industry in the pursuit of knowledge; agreeable to the custom in his day, a consequence of the favourable sentiment generally entertained here of the state of chirurgical knowledge in France, he resorted thither, and became accurately informed in the opinions and operative modes of practice of the distinguished surgeons of that nation."

In concluding a reference to the work of this able surgeon, it must be added, that he it was, who started a course of lectures for naval surgeons in Windmill Street, where he was succeeded by William Hunter, so that some of his teaching may have been passed on to the immediate subject of this essay. Still we note an almost total absence of pathology in Sharp's writings; here and there he discourses upon the cause of disease, and offers an explanation of its course; but, as a rule, he, like all others up to Hunter, was practical only.

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[9] "Works," by Earle, Vol. III., p. 14.

[10] Paget, Oration, p. 53.

[11] "Critical Enquiries," p. 78.

[12] Oration, p. 45.

A more immediate contemporary of Hunter was Joseph Warner, also one of the Surgeons to Guy's Hospital, from 1745 to 1790.[13] In 1784, when 67, Warner—the "excellent Warner," as one writer calls him—published a valuable and instructive collection of "Cases in Surgery." His earlier work on the Eye went through several editions. The cases are well recorded, and give an excellent idea of the mode of treatment of the time. He advocated, and successfully practised, the free incision of the chest in empyema, and directs that the knife be kept to the upper margin, of the lower of the two ribs, to avoid the artery. Referring to the translucency of hydrocele, he points out that in young children the hernia sometimes transmits light. He, however, recommends poultices made of the dregs of strong beer, and gives elaborate instructions for the use of ointments. Many of his methods are rough and severe. Still, on the whole, it must be allowed that he added to the advance of the art. Sir W. Blizard says of him, that "the truth of his observations may be depended on, for his motives were pure and honourable. His pages will be referred to with interest, as expressive in a great degree of the opinions of the surgeons in his day of observation."[14]

But the greatest surgeon by far of this period was Percival Pott. In 1751, Hunter joined St. Bartholomew's Hospital, Pott being then 38, and fifteen years his senior. Most of his works were published in Hunter's lifetime, and to these in his surgical lectures Hunter refers. Certainly, a perusal of Pott's essays on head injuries, on hydrocele, and on fractures, impresses one with the great accuracy of his observation, the truth of his deductions, and the wide range of his knowledge. He quotes all the earlier authors, writes in an elegant, graceful style, and, indeed, must be considered the most polished medical author of the time. He added many new methods of treatment, simplified many others, and was instrumental in removing many of the more rough and harsh methods in vogue.

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[13] He was, at 17, apprenticed to Sharp, and succeeded him in his lectures. On comparing the dates, it will be seen that these two were colleagues for twelve years.

[14] Oration.

The earlier Hunterian Orators at the College—Blizard, Abernethy, his pupil, Norris, and others—all speak in the warmest praise of Pott. He rose to the highest position in surgery; and when he died, still full of vigour and in active work, at the age of 75, Hunter was left the first surgeon of the day, being himself now 60 years old.

Bromfield, who was a colleague of Hunter's, must also be mentioned. "More than any other English surgeon of the time, except Hunter, he might be counted as a scientific surgeon; and whenever he could, he tried to make surgery fit into such physiology as was prevalent in the schools."[15]

One remark applies to all the writings I have referred to—viz., that while there was evidence of the study of morbid anatomy, especially by Pott, there was no pathology in the wide sense of the term, no attempt to show that the course of morbid processes were guided by general laws, and few or no principles of treatment.

A sharp and well-defined line is reached when we examine the writings of the great physiologist and surgeon who forms the subject of our study to-night. For the first time, we read of surgical principles, we are told that the processes of disease must be studied through those of health. The men of his own time pass away almost forgotten, and we see a new era—a "Hunterian era"—arise. It seems inconceivable that in the life-time of one man so much could be accomplished, and we of the present day cannot realize that many of the pathological laws which we discuss with so much familiarity were worked out by Hunter, and that too by his unaided efforts. The one from whom Hunter learnt most was undoubtedly his brother William. "It was under his tuition and patronage that the more peculiar talents of his brother were first elicited and cherished, and to his example and instructions we are greatly indebted for many of the advantages which have since flowed down through others to us."[16] "That he acquired the best physiological knowledge of the time from his brother's lectures cannot be doubted, but he was not satisfied without examining for himself, and forming his own conclusions." Not satisfied with Haller, he searched for every fact belonging to the subject he was investigating, to form the basis on which he reasons; and Abernethy, who is his best interpreter, says he finds "no inference deduced from insufficient or irrelevant premises." Hunter himself tells us, in the introductory chapter to his work on the Blood and Inflammation, that he compiled the work from notes made in the course of twelve years' residence in London. "During this space," he says, "my time was occupied, partly in my education, under the late Dr. Hunter, and partly in assisting him. In the winter season I was principally employed in the dissecting-room, where I taught the practical part of anatomy; in the summer I attended the hospitals."

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[15] Paget, Oration, p. 53.

The "European Magazine" for 1792, an extract from which is appended to Abernethy's work,[17] contains an account of Hunter's lectures, and as the Editor assured Abernethy that he had the information from Hunter himself, we may look upon the account in the light of an autobiography. From this we learn, that "his purpose is to give a comprehensive view of the system, and investigate the principles upon which the practice of surgery is founded—viz., to show the actions of the body and its parts when in the diseased state, with the actions and efforts of nature to recovery, and the necessary and proper assistance to be given by the surgeon." Again, "He (the surgeon) ought not only to know the whole of any one simple action, or the knowledge of all the actions singly, but he should ascertain their correspondence, mark their relations, and acquire a competent idea of the compound actions and general fabric of the machine. Mr. Hunter having observed, that the greatest part of the books published on surgery contain little else than relations of cases and modes of treatment, and that the practitioners have been too easily satisfied with a collection of facts, without embracing the catalogue of diseases as a system, proposes in his course to examine the theory and principles of diseases in a regular series. His ideas, his mode of reasoning, as well as his arrangement of diseases, are new, and he, therefore, has received little aid from books or from other professors. The novelty of his ideas occasions also the application of new terms; and those which he has given, we may consider as clear and explanatory, since they are adopted by others, and brought into use."

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[16] Chevalier, Oration, p. 38.

[17] Introduction to Physiological Lecture, 1814.

From 1760 to 1763 he was with the army on the Continent, whither he went to recruit his health, which had suffered from the assiduity with which he had prosecuted his enquiries into the anatomy of the lower animals. On his return, he began teaching, in order to obtain an income, and from this to the day of his death he taught regularly, and indeed never appears to have left London, unless compelled to do so for the restoration of his health.

In 1773, when he was 45, he began a course of lectures at St. George's Hospital. These he relinquished in 1792, handing over to his successor, Home, his manuscript, with notes on the fly-leaf of the specimens he employed for illustration. These original lectures never were published, nor did Home preserve them, but for reasons best known to himself, they were destroyed, with many other even more valuable writings. Happily, among the many who listened to Hunter, there were some who took careful notes, and from those made in shorthand by Mr. Rumsey, the able editor of Hunter's works, Mr. Palmer, has compiled the lectures. He did not during his lifetime publish any important surgical work—that on Inflammation was partly through the press at the time of his death, and was published in the following year. In this masterpiece we have his mature opinions, criticised from year to year by himself, and by many generations of pupils.

In the introduction he says:—"About the year 1770, when I began my lectures on the principles of disease, inflammation was the subject of a considerable part of them; and, from that time to this (1792), though I have been extending and correcting the materials, my principles remain the same. To distinguish the different species of inflammation, and to express my own ideas the better, I was naturally led to substitute such terms as appeared to me more expressive of what was meant, than those usually employed. The best test of the propriety of these terms is, that they have been adopted by many medical writers since that period; and indeed my principles have undergone the same kind of test. In this some medical writers have been very liberal, for not contented with taking hints, they have even laid hold of large portions of my lectures, screening themselves under the very honourable protection of their not being in print, and at the same time quoting authors to show their reading and their 'candour.' It would appear that they consider the discoveries and opinions of a lecturer, found probably in a manuscript, as fair game; though their delicate attention to the rights of another would, no doubt, have prevented them from adopting the same doctrines had they been actually in print. Such freedoms have made me anxious to publish, not only because the public interests itself in the origin of every discovery or opinion, but because I wish to preserve my right, and also to give in a more perfect form, what was thought worthy of the public even in a mutilated state. My respect for that public, however, has withheld me hitherto from publishing, that I might first be able to complete my subject as far as time and other circumstances would allow me. I hope this publication will at least have equal good effects with those I have before produced, not only enabling persons to write on the same subject, who otherwise could not have done it, but even to become critics in matters of which till then they were entirely ignorant. I have endeavoured, as far as my other pursuits would permit, to form this work into a regular system—one part exactly depending on another; how far I have succeeded the world must judge; but, at the same time, it ought to be considered as a new figure, composed from rough materials, in which process little or no assistance could be had from any quarter, wherein the author is conscious of many imperfections, more of which he is persuaded he shall himself observe at every successive review."

This work was, there is every reason to believe, eagerly read by the leading men of the time. We find, for instance, Abernethy saying (in 1814), "I know of no book to which I can refer a surgical student for a satisfactory account of these febrile and nervous affections which local disease produces, except that of Mr. Hunter." I think to those who have passed from the period of studentship, that part of the work which deals with the pathology of inflammation will be found as instructive to-day as it was in the time of which Abernethy speaks. For instance, he defines inflammation as "an increased action of that power which a part naturally possesses; and in healthy inflammation, at least it is probably attended with an increase of power; but in inflammation which terminates in mortification, there is no increase of power, but on the contrary, a diminution of it." He means by power, I take it, the ability of the part to direct the processes in health, and in disease, the controlling influence over the action or life of the part. So long as the power is capable of directing the processes, the course of the inflammation will be conducted to the advantage of the part, as in the union of wounds; but when the ruling and guiding influence is over-balanced and conquered, then action, or rather over-action, having its sway, a destructive termination results; or, as Hunter puts it, "a diminished power, joined to an increased action, becomes a cause of mortification, by destroying the balance which ought to subsist between the power and action of every part."

In these remarks on the power of resistance, we are reminded of the latest discoveries in the pathology of cell-action—I mean the attractive views on the phagocytic action of leucocytes. It is a good example of what is to be noticed all through his work; he is always suggestive. As you know, it was not till many years later that the part played by the cells was discovered, and not till later still that bacilli and other destructive agents were shown to be the cause of the inflammatory processes. Hunter, however, recognised that there are "causes of mortification preceded by inflammation which do not arise wholly from that as a cause, but rather seem to have something in their nature, and of this kind is the carbuncle." Thus, as I have mentioned above, does he point out the differences, and without attributing the variation, as the older writers would have done, to evil juices and spirits, at once directs the thoughts of others into the appropriate channels of discovery.

He is still more instructive when he speaks of the treatment of mortification. "If," he says, "this account of mortification arising from no specific nature be just, we shall find it no difficult matter to establish a rational mode of cure." He objects to the too liberal use of wine, because of the depression that follows; and as to local measures, he advises the greatest discrimination. The criticisms on the methods in vogue, show that he wished to teach only from general principles founded on pathology. He says, "Upon the principles here laid down, the bark is the principal medicine as yet known that we depend upon, as it increases the powers and lessens the degree of action. Upon many occasions opium will be of singular service, by lessening the action, although it does not give real strength. I have seen good effects from it both when used internally in large doses, and when applied to the part. It is proper also to keep the parts cool, and all the applications should be cool."

I have given this lengthy extract, because it affords a good example of his method of dealing with treatment, a method that no one used before. He leaves his readers to work out for themselves the details. Let us for a moment recall that, when Hunter was teaching in this way, there was no other lecturer in London who attempted a similar method; indeed there were some who thought that in his investigations in anatomy and physiology he was wasting time. A colleague at St. George's, when asked to join in giving a series of lectures, replied that he did not think that the art could be improved. So much were many at variance with his teaching, that Hunter was not unfrequently annoyed at the opposition he encountered. Had not his views proved by the progress of our knowledge to be correct, this remark would only show an irritable state of mind, and an arrogant one too. Listen, however, to one who heard him lecture and who knew him well—Abernethy. "He seemed to me conscious of his own desert, of the insufficiency and uncertainty of his acquirements, and of his own inability readily to communicate what he knew and thought. He felt irritated by the opposition he had met with in establishing his opinions, and still more by finding, when he had surmounted this difficulty, that these opinions were, by the malice of mankind, ascribed to others. All which I think may be fairly inferred from a single sentence he one day addressed to me. 'I know,' he said, 'I am but a pigmy in knowledge, yet I feel a giant when compared with these men.'"[18]

I will now quote a passage in which he sums up many of the points of which he has been treating. It affords an example of his method of generalization; and here it must be remembered, that this inference is the outcome of many years of thought, of observation on healthy and diseased processes, and of experimental investigation.

"As disease is a wrong action of the living parts, the restoration to health must first consist in stopping the diseased dispositions and actions, and then in a retrograde motion towards health.

"In treating systematically of such complaints as are the object of surgery, we should always begin with the most simple, and advance gradually to the more complicated, by which means we shall be more clearly understood.

"There are many complaints requiring the attention of the surgeon, which cannot be called disease, because they have been produced by something foreign to the body, as in accidents. They are to be considered as a violence committed upon it, altering in some degree the structure of parts, and consequently interrupting the natural operations already described.

"The parts so hurt, not being able to pursue their original or natural mode of action, are obliged to deviate from it; and this deviation will occur according to the nature of the violence, the nature of the part, and the state of the constitution at the time. An alteration in structure requires a new mode of action for its restoration; as the act of restoration cannot be the same with what was natural to the parts before any alteration had taken place.

"The alteration of structure by violence requires only the most simple change in the natural action of the part to restore it; and of course, the most simple method of treatment by art, if it be such as to require any assistance at all; for there are many accidents where none is necessary. It will be proper to observe here, that there is a circumstance attending accidental injury which does not belong to disease—viz., that the injury done has in all cases a tendency to produce both the disposition and the means to cure.

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[18] Physiological Lecture, p. 199.

"The operations of restoration arise naturally out of the accident itself; for when there is only a mechanical alteration in the structure, the stimulus of imperfection taking place immediately calls forth the action of restoration; but this is contrary to what happens in disease; for disease is a disposition, producing a wrong action, and it must continue this wrong action till the disposition is stopped or wears itself out; when this salutary effect however has once taken place, the state of the body becomes similar to that in a simple accident—viz., a consciousness of imperfection is excited, which produces the action of restoration."

The directions he gives for the treatment of wounds are, when we consider the time they were written, so novel, and so different from those of the other writers of the time, that I will trouble you with one more extract. "Whenever a clean cut wound is made in sound parts, and when the surfaces can be brought into contact, or when there is sufficient skin to cover the part, this practice may and should be followed." For uniting the edges he preferred plaster or the "dry suture," as it was called. "The interrupted suture is now," he says, "in great measure laid aside in practice, not from the impropriety of uniting parts by this process, but from the ineffectual mode of attempting it. In what manner better methods could be contrived, I have not been able to suggest."

In treating of lacerated wounds, nothing more complete, and at the same time more terse, could be written. He recognises the reason why contused wounds must suppurate, points out how suppuration may be minimised in lacerated wounds, and over and over again does he insist on the value of blood for a covering to wounds; not only because it is the most natural, but because it does in part organize, and on this ground directs, that it is unnecessary to be too careful in the sponging out of wounds.

Another practical conclusion he draws from the study of the process of union of wounds is so exactly that upon which we insist at the present day that I am induced to quote again. I mean the treatment by rest, with dry and infrequent dressings. "If the edges cannot be brought into complete apposition, they must unite by another process than the first intention. If kept moist they will inflame as deep between the cut surfaces as the blood fails in the union, and there suppurate and granulate; but if the blood is allowed to dry, and form a scab, between and along the cut edges, then inflammation and suppuration of those edges will be prevented, and this will complete the union."

Of the influence of rest he writes:—"The first and great requisite for the restoration of injured parts is rest, as it allows that action which is necessary for repairing injured parts to go on without interruption, and as injuries often excite more action than is required, rest becomes still more necessary. Rest is often admitted from necessity, as in the fracture of a leg, but seldom where motion is only an inconvenience."

In the accounts of his published cases, we read of the first dressing being made on the fourth, or again on the seventh day. In the interesting article on scabbing there are many valuable suggestions; he points out the injurious effects of a poultice in a graze of the shin, and the value of assisting the formation of a scab. In burns and scalds he also advises the use of flour to hasten the scab formation. In recent wounds we now seal with antiseptic powders, such as boric acid and iodoform, with or without collodion, while Hunter employed blood; and in our day, before we used the aseptic gauzes, we were accustomed, like Hunter, to allow the blood to coagulate on the surface in cases of compound fracture.

Such teaching as this marked an immense advance in scientific thought, and we can understand how these views would be welcomed by the younger men. For the first time surgery was taught as a science; the processes of healing and restoration of injured and of diseased parts were shown to depend on the operation of large and fixed laws. He showed, moreover, that there was one pathology for medicine and for surgery; that medicine in its widest sense was one and indivisible, and must be studied as a whole, for no part can be understood if it be studied without reference to the rest of the body. The physician must understand surgery, and the surgeon the medical treatment of disease.

When we remember that in Hunter's time a surgeon was not supposed to give internal remedies beyond a black draught, the importance of this welding of the two branches of medicine by means of a common pathology will be appreciated. As we read this great work to-day, we feel a glow of interest, we catch the enthusiasm of a man who investigated for himself, who speaks unfettered by authority, who moreover tells us truths which we in our time have seen verified, and withal, we note the great charm of humility, and his recognition of the fact, that he is but on the threshold of the subject.

It has been said, and it is no doubt true, as Owen pointed out, particularly with regard to the blood, that Hunter was in many things ignorant of the work that had been done by those who preceded him, or who were working in the same direction. This led him to find that he had been anticipated by others, and gave moreover to those who were opposed to him the means of undervaluing his discoveries. But it was not so much what Hunter discovered, as the use he made of his observations, in building up his general principles and laws. I think it is not a matter for regret that he worked alone, or almost so, for already master of human anatomy, his researches necessitated the examination of five hundred different species of animals, exclusive of repeated dissections of different individuals of the same species.[19] To the classification of these he brought a powerful intellect, an indomitable industry, an original method, and working on entirely new lines, he drew from his immense collection of facts the general laws and principles to which I have referred. Surgery he raised from a practical art to the dignity of a science, and showed to physician and surgeon alike that in the treatment of disease there was one common principle. Writing on this, one who knew him well says, "that which made him so superior to his competitors was his original expanse of thought, his being exempt from that prejudice in favour of ancient authorities which fetters the youthful mind; it was his steady determination of investigating for himself, his deep scrutiny of every object that came under his inspection, his vigorous intellectual activity."[20] Had Hunter published an account of all the dissections he had made, he would have been considered undoubtedly by all, the greatest contributor of his time to the subject of comparative anatomy. All his observations were carefully recorded in manuscript, and filled more than one hundred volumes. But he had higher aims than the reputation of a mere collector of facts. For instance, on one occasion the subject of animal heat was discussed at a meeting of the Royal Society which drew from Hunter a valuable paper on the heat of animals and plants, the result of years of observation and reflection. In a manuscript relating to a dissection of a turtle he says, "The late Sir J. Pringle, knowing of this dissection, often desired me to collect all my dissections of this animal and send them to the Royal Society, but the publication of a description of a single animal, more especially a common one, has never been my wish."[21]

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[19] Owen, in "Hunter's Works," by Palmer, Vol. II., p. 7.

In proof of the important general principles at a knowledge of which Hunter had arrived, Owen quotes the following passage from a description of the drawings illustrative of the development of the chick.

"If we were capable of following the progress of increase, of the number of the parts of the most perfect animal, as they first formed in succession from the very first, to its state of full perfection, we should probably be able to compare it with some one of the incomplete animals themselves, of every order of animals in the creation, being at no stage different from some of those inferior orders; or in other words, if we were to take a series of animals from the more imperfect to the perfect, we should probably find an imperfect animal corresponding with some stage of the most perfect."

"We may, I think," says Owen, "perceive, from the evident difficulty with which Hunter expresses the idea, that his mind was oppressed with both its novelty and vastness. Men's thoughts require to be familiarised with propositions of such generality before their exact limits and full application can be appreciated."

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[20] Thomas, Oration.

[21] Owen. *Ib.*, p. 6.

The obscurity of his style has often been regretted, and it has been attributed to the want of education. He did not possess that full acquaintance with our language which would have enabled him to command words, with nearly the same meaning, and so to express accurately the idea he wished to convey. But I doubt if the want of education made all this difference. I rather incline to the view, that where obscurity exists it is due to the effort he made to draw from an immense crowd of facts a general law. Moreover, his was a new way of dealing with the subject, "and when we remember that his originality of thought and his independence of judgment, leading him to differ from many who had preceded him, had formed a gradual chain of new and extraordinary discoveries, which in a manner exhausted the language of science, we can scarcely wonder at that obscurity in his writings which we have occasionally to lament."[22]

As I have said in an earlier part of this address, the period following Hunter's time stands out in great contrast with that which preceded him, and to his efforts, more than to those of any other, was this difference due. Equally striking is it to observe the men who followed Hunter and carried on his work, and to note that they were his pupils. Amongst the most brilliant were Cline, Abernethy, Carlisle, Astley Cooper, Everard Home, and James Earle, all men who have left their mark in surgery.

It was not his eloquence that attracted an audience, for his style of lecturing was unattractive. "He was not," says Abernethy, "a brilliant character amongst us. He had not the happy talent of displaying the stores of his mind, nor of communicating to others the same perception of the importance of his facts and observations as he himself entertained."[23] He read slowly from manuscript, seldom raising his eyes, and those who wished to learn had to pay the closest attention to follow him through the steps by which he passed to his general conclusions. He seems to have disliked lecturing, but continued to do so for twenty years, considering the annual review in the light of a criticism of his work. His class was small, but there can be no doubt it contained the best students of the time. His very method of lecturing shows that he was still thinking over the subject, was still criticising himself, and correcting what he had written. He attached no value to opinions that were not based on facts, and as his store of facts increased, he would make the necessary alterations in his inferences.

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[22] Thomas. Op. cit.

[23] Lecture, 1815.

To a pupil—Astley Cooper—who asked with surprise whether he had not the year before stated an opinion on some point directly at variance with one he had just put forth, he replied, "Very likely I did; I hope I grow wiser every year."[24] Occasionally he would say to a pupil whom he saw taking notes, "You had better not write down that observation, for very likely I shall think differently next year." Such remarks as these indicate the searcher after truth, and show that he did not consider the subject he was discussing finally settled. Moreover, he illustrated his lectures from his museum, the most extensive of the time. It was not till after his death that his leading work was published, so that his influence upon others was largely due to these lectures, and there can be no doubt that his very hesitation to publish, until he could be sure of the truth of his conclusions, led others to pay particular regard to what he said.

He was attractive in another way—viz., in the influence of his great and untiring industry. The effect of this point in his character is well illustrated by the account of a personal interview given by one of the earlier orators at the College. "Upon my first arrival in London, on presenting a letter of introduction from a mutual friend, he desired to see me at five the next morning! Having already the greatest respect for his great professional talents, it may be easily imagined to what height my curiosity was raised by so extraordinary an appointment. No one will doubt my punctuality of attendance. I found him in his museum, busily engaged in the dissection of insects. The interest which he seemed to take in his employment; the sagacity of his observations on it; the acuteness of his general remarks upon whatever subject was started; the almost blunt manner in which he questioned me respecting my medical education, united to the kindness of his admonitions relative to my future plans, made a very forcible impression on my mind; it was a mingled feeling of profound respect, surprise, and admiration."[25]

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[24] Ottley's "Life," p. 48.

"It is," says Abernethy, "scarcely credible with what patience Mr. Hunter examined the structure of the lower kinds of animals. He constructed spectacles, with glasses of different degrees of magnifying power, so that by a slight alteration of the position of the head he could look through the one or the other. Mr. Clift tells me he would stand for hours motionless as a statue, except that with a pair of forceps in either hand he was picking asunder the connecting fibres of the vessels or parts." This was written of him in the year of his death.

Another reason why he attracted others was the freedom with which he communicated all he knew on any subject. Careful and particular as he was that nothing should be published till it had been subjected to the test of a long criticism, he was free and open in his communication by word of mouth. Indeed it was by this method, more than by his published writings, that he diffused his information. "There was," says Norris, "in Hunter an openness, and a free communication of such remarks as could interest those of his own profession, and consequently mankind."[26] "His candour," says Abernethy, "was evident in all his actions; he readily told all he knew or thought on every subject."

"His," says Chevalier,[27] another pupil, "was that true and lofty spirit of science which will not condescend to seek for eminence or wealth, by arrogating a degree of skill and dexterity that no other can attain, or vaunting a remedy with which no one else is acquainted, but which rests for its reward on the fair fame and merits of its acts; which is ever intent on the discovery of truth, and is then most of all delighted when it can effectually assist others in the common labour and duty of us all—the advancement of human knowledge and the alleviation of human distress. It was this which gave to his example, and to his efforts for the improvement of his profession, that moral and enduring force, without which they would have failed of their aim ; he was as willing to awaken and assist the researches of others as to prosecute his own. The thing that vexed him most was to see so much to be done, and so few disposed to take a part in doing it.

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[25] Thomas, Oration, 1827, p. 415. [26] Oration, 1827. [27] Oration.

"It was with a view to form and to develop such useful characters that, in conjunction with his learned friend, Dr. George Fordyce, he founded the Society called the Lyceum Medicum Londinense, for the benefit of students, as well as for settled practitioners in each branch of the profession. To this Society he gave gratuitous permission to meet weekly during the season in his lecture-room, where he generally displayed for their inspection the most interesting and instructive additions that were made to his museum."

The formation of a society for discussing medical and scientific subjects, referred to in the preceding paragraph, was another means of diffusing knowledge, and another proof of the freedom with which Hunter gave to others the results of his work.

In 1767, Hunter proposed to a few friends that they should adjourn from the Royal Society to a tavern, and discuss the subjects in which they were more immediately interested. Out of this, the earliest attempt to form a society for the discussion of medical subjects, arose the Lyceum Medicum. "It met weekly in the lecture-room in Leicester Square, and was numerously attended by men of general science."[28] This was, so far as I can discover, the same Society as that called "The Society for the Improvement of Medical and Chirurgical Knowledge," from which were issued two volumes of transactions, both containing important papers by Hunter, also one written by Home, from materials supplied by Hunter, contains a full account of the operation for aneurysm.

Besides all that Hunter accomplished for surgery, beyond all the trouble he took to improve the position of the surgeon, there was in his personal character that which attracted others to himself, and to his mode of study. That he was a genius cannot be doubted by any ; that he was a deep and profound thinker is evident, not only from the proofs of this contained in his writings, but we learn it as well from those who knew him. Cline, whose oration for 1816 was unfortunately never published, but who knew him well, says—" Much as Mr. Hunter did, he thought still more; he has often told me his delight was to think" ; and indeed no one can contemplate the celebrated portrait hanging in the College library without appreciating this side of his character. He is sitting in an attitude of deep reflection, as if about to combine a series of observations into one grand law.

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[28] Norris.

His was that kind of genius, however, which was steadied and controlled by a love of truth, by great industry, and more than all, by a profound humility, not only in regard to his own powers, but also as to the work he had accomplished. His constant saying was, " We are but beginning to learn our profession" ; and though he was aware of the value of his observations, and saw by anticipation the effects that they might produce, and was not unfrequently irritated at the unwillingness of others to accept the conclusions at which he had arrived, and the truth of which he was able and willing to demonstrate; yet he was often heard to declare that he was not conscious of possessing any peculiar talent, and that if he had promoted professional knowledge, it seemed to him chiefly to have arisen from his disposition to distrust opinions and to examine every subject for himself.

With no one else can Hunter be compared more accurately than with Newton. Their methods were much alike. As did his great predecessor, so Hunter, having grasped the great truths of pathology, submitted them to the test of more than thirty years of criticism before he felt justified in giving them to the world, with the authority that attaches to a printed publication. To this day many of his laws are as true as when they were deduced. That others have not stood the test of recent advances is but the fate of all forms of knowledge. That which is admitted to be true and wise to-day may, by the advance of time and the progress of science, be compelled to yield to wider knowledge. As the most eloquent of all Hunter's orators has beautifully said, " And in this is no disparagement of knowledge. That cannot be despicable which is, for the present, the best possible, and has in itself capacity for change to a yet better future. But, similarly, that must not be despised which, in the past, was good, and though it fell short of the truth was not wholly erroneous from it. So, in estimating Hunter's contributions to the truths and laws of science, we must not scorn all those which have not borne unchanged the test of time; it would be as unreasonable to scorn a noble ancestry."[29]

As I have mentioned before, Hunter seemed always delighted to communicate what he knew and thought to others; he did not conceal his designs, and soliciting the assistance of others, was ever willing to help in return. To young men he gave much assistance and advice, and nothing seemed to please him more than a well dissected specimen. When Carlisle brought him one day a preparation of the internal ear, Hunter, to whom he was a stranger, immediately gave him a free ticket of admission to his course of lectures. To those in distress he seems to have been generous to an unusual degree, and from this and the amount he spent on his collection, he died leaving his family unprovided for. I think from Ottley's Life, we are apt to get the notion that Hunter was rough, abrupt, and brooked no other opinion but his own. Mr. Clift, however, in his letter to Sir W. Lawrence,[30] expresses indignation that so many stories, by no means true, should have been given to the public; and denies, for example, that the tendo-Achillis was ruptured while dancing, asserting that it took place, on rising and stretching himself on his tip-toes, after a long period of close dissection—an explanation quite as reasonable as that advanced by his biographer. He was a man too of "very considerable humour. His views of subjects in general were quick and peculiar, and when so disposed, he could place them in a very ludicrous point of view." Abernethy also says that he had a great deal of drollery in his composition. And Mr. Clift, who acted as his amanuensis for the last year and a half of his life, tells us "he was mild and kind in his manner, but not servilely courteous, to everybody, and I believe made no distinction between high and low, great or small."

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[29] Paget's Oration, p. 30.

[30] Oration, 1846.

When, after many years, and yet without having sought the position by artifice, he had attained to the foremost place in the profession, and "when the abstract acquisitions of his study had become blended with copious experience, he was appealed to by physicians and by surgeons as a final judge upon all unsettled questions in pathology. And even in the full matureness of experienced wisdom he dispensed his decisions with unabated anxiety and painful solicitude."[31]

It would be impossible to conceive a finer tribute to the knowledge, the wisdom, and the professional standing of any one. To be valued by others for careful judgment, founded on a deep knowledge of disease, and also for the care and caution with which the opinion is delivered, is to attain a high position in our profession.

In the last year of his life he is still full of scientific work; he would at this time, though over sixty, stand for hours at a dissection "as if nailed to the spot."

Such is the character of Hunter, so far as I have gleaned from those who knew him, and those who were best able to interpret his mind. Inadequately as I have portrayed the influence of his great mind on the men whom he taught, imperfectly as I have sketched the method he used, and the results he attained, I trust that the effect of my work may at least induce others to make themselves acquainted with his writings.

Fortunately for surgery, Hunter applied the results of his investigations to the improvement of practical details. He did more than any other man to raise the position of surgery. He perceived that no system of physiology could be perfect that did not explain the morbid as well as the healthy actions of life, and therefore, says Abernethy, "he appears to me as a new character in our profession; and briefly to express his peculiar merit, I may call him the first great expositor of disease." As I have shown in an earlier part of this address, he was the first to deal with the processes of disease, to show that pathology was a science.

"I am," says Abernethy, "old enough to remember the state of surgery and surgeons, in this metropolis, previous to the general promulgation of the new facts and opinions he added to the stock of professional knowledge, and I believe him to be the author of a great and important revolution in medical science." "Who," he says in another place, "first explained in a physiological and satisfactory manner the diseased processes I have referred to—the formation of abscesses, the secretion of pus, the instertial and other growths, the cause and circumstances of mortification—was it not Mr. Hunter? We now hear no more of those ancient metaphors, concretion and erosion, but we find all the morbid changes accounted for by perverted action of the ordinary powers and structure of parts, clearly perceiving that the same powers and organisation which, by their natural and common actions, produce health and beauty of appearance, do, when perverted, occasion disease and deformity."

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[31] Carlisle's Oration, 1820.

Another writer, who for many years was his assistant, and who knew him better than anyone, says, in the first oration at the College, "From the time of Hunter our profession has no longer been confined within the narrow limits of a practical art; assisted by his labours, it has acquired a new character, has assumed a more elevated form, and has expanded itself into a science."[32]

All the surgery before Hunter was only that of experience. Others, as I have shown, wrote well on practical matters, and none better than Hunter's great colleague, Pott; but "with the science and the exposition of principles Hunter alone deals worthily."[33]

"Hunter," says Lawrence,[34] "found surgery a mere mechanic art, hardly emancipated from its connection with the occupation of a barber. He left it a beautiful science, equal to any in attractive interest, and inferior to none in its capability of alleviating human suffering." Slowly, as I have sketched in an earlier part of this address, surgery has been improving, and increased facilities were obtained of acquiring a knowledge of anatomy; but the rare combination that occurred in Hunter, of deep scientific thought, with a desire to apply his discoveries to the alleviation of suffering, and the progress of surgery, operated to raise the art into a science. Time does not permit my dealing with the celebrated discovery of the means of treating aneurysm, and the reasons which led him to suggest the method. It is an evidence of Hunter's belief, that what is true will endure, and in the end will prevail, that he never wrote a single line to recommend this operation. The first account was published during his lifetime by Home. In his lectures,[35] Hunter, after strongly advocating the method of laying open the sac and of ligaturing the vessel above and below—a method at that time condemned by the majority of surgeons—thus refers to the new operation. Writing in 1786, a year after the operation, he says—"In December, 1785, I performed the operation in a manner different from that ordinarily practised, and with success. The particulars are given in the 'London Medical Journal.' I would only observe, that in future I would advise only tying the artery in one part, and not to endeavour to unite the wound by the first intention." Such is his brief reference to this great improvement in surgery.

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[32] Home's Oration, 1814. [33] Paget, p. 29. [34] Oration, 1846.

There is, perhaps, no piece of his work that shows more clearly the value of the application of physiology to the practice of surgery than this operation. Hunter connected pathology with physiology, and it is impossible ever to disjoin them. "Before him surgery and physiology were far asunder, no one strong mind had ever deeply studied both, and become conscious that both were parts of the same science of living things, and that each might give light to the other, and each be a test of the other's truth. This was Hunter's greatest work for surgery. He brought the scientific method into the study of the practice, and he welded scientific knowledge with the lessons of experience."[36]

To quote once more our most eloquent and most graceful writer, whose thoughts are ever worthy of the widest circulation. "The influence of such men as Hunter reaches far beyond the time and space of their conscious activity; their true thoughts live after them. Their true thoughts not only endure and remain in the continuity of mental life, they really live; they pass on from one generation to another, and in the minds of each succeeding generation they are developed—they grow—they attain more nearly to perfection. . . . Thus when we honour the memory of Hunter, we honour not only that which is passed, but that which is still present; a still abiding power doing good. For Hunter's true thoughts still live in us, and they will live after us, and never cease to help and urge men onward in the pursuit of truth.

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[35] Palmer, Vol. I., p. 551.

[36] Paget.

"In the world of mind, he that is mortal may produce that which may be immortal."[37]

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[37] Paget's Oration, 1874.